IN THE CLAIMS

1. ~~An amusement apparatus for water sports activities utilizing a stably-~~ shaped body of water having a surface thereon, comprising:

a). means for forming a substantially horizontal body of water, said water having a substantially horizontal surface thereon;

b). the water of said horizontal body of water moving in a predetermined direction over said horizontal forming means with a first horizontal velocity:

(1) said horizontal body of water:

(a) having a shape and dimensions thereof substantially stable with respect to time;

c). means for forming an upwardly inclined body of water, said water having an upwardly inclined surface thereon;

d). means for joining said horizontal forming means to said upwardly inclined forming means.

e). the water of said horizontal body of water moving over said joining means and on to said upwardly inclined forming means to form said upwardly inclined body of water;

f). the water of said upwardly inclined body of water moving over said upwardly inclined forming means with a second velocity:

g). said upwardly inclined surface of said body of water having a slope sufficient to permit an object floating by condition of motion thereon to slide down said upwardly inclined surface with a third velocity, relative to said second velocity, at least as great as the negative of said second velocity.

2. An apparatus as defined in claim 1 wherein said means for forming said upwardly inclined body of water includes first and second interconnected inclined surfaces, said first surface being connected to said means for forming said horizontal body of water, said second surface being connected to said first surface to provide a continuous flow of water over said horizontal, first and second surfaces, said second surface having greater angular inclination with respect to said horizontal than said first surface.

3. An apparatus as defined in claim 2 wherein the angular inclination of said second surface is sufficient to permit an object floating by condition of motion thereon to slide down said second surface with a velocity greater than the negative of said second velocity.

4. An apparatus as defined in claim 3 wherein the minimum length in the direction of flow of said horizontal flow forming means is equal to 1.5 to 4 times the total vertical height of said means for forming said upwardly inclined body of water.

5. An apparatus as defined in claim 4 wherein said first inclined surface has a length in the direction of flow which is at least equal to the length of a device being employed by a user of said apparatus.

6. An apparatus as defined in claim 4 wherein said first inclined surface is curved.

7. An apparatus as defined in claim 4 wherein said first inclined surface is straight.

~~8. An apparatus as defined in claim 6 wherein said body of water conforms to said horizontal, first and second surfaces.~~

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9. The apparatus as defined in claim 1 wherein said upwardly inclined body of water and said horizontal body of water have sufficient depth to permit surfing maneuvers thereon.

10. The apparatus as defined in claim 1 wherein said upwardly inclined surface of water and said horizontal surface of water have sufficient width and length to permit surfing maneuvers thereon.

~~11. An amusement apparatus for water sports activities using a body of~~ water flowing in a predetermined direction comprising:

a). means for forming an upwardly inclined body of water, said water having an upwardly inclined surface thereon;

b). said forming means defining an elevated ridge line, said ridge line having first and second sides, one of said first and second sides having a greater elevation than the other of said first and second sides;

c). the water of said upwardly inclined body of water moving over said upwardly inclined forming means with a range of velocity and volume to a pre-determined maximum;

(1) said inclined body of water

(a) having shape and dimension thereof proportional to pre-determined velocity and volume ratios;

i) at a minimum, having a shape and dimensions thereof that are substantially stable with respect to time at said other side and having

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a white water breaking region maintained upstream of said one side;

ii) at a maximum, having a shape and dimensions thereof from said other side to said one side substantially stable with respect to time;

(b) having at a minimum, velocity and volume sufficient to form, over a period of time, an inclined body of water that at least flows over said other side;

(c) having at a maximum, velocity and volume sufficient to form an inclined body of water that flows over said other side and said one side.

12. The apparatus as defined in Claim 11 further comprising:

a). means for forming a horizontal body of water with a horizontal surface thereon;

b). the water of said horizontal body of water moving over said horizontal forming means with a first horizontal velocity;

(1) said horizontal body of water:

(a) having a shape and dimensions thereof substantially stable with respect to time;

c). means for joining said horizontal forming means to said upwardly inclined forming means;

d). the water of said horizontal body of water moving over said

joining means and on to said upwardly inclined forming means to form said upwardly inclined body of water with said upwardly inclined surface thereon.

13. The apparatus as defined in Claim 12 further comprising:

a). means for forming a downwardly inclined body of water with a downwardly inclined surface thereon;

b). the water of said downwardly inclined body of water moving over said downwardly inclined forming means with a first velocity;

(1) said downwardly inclined body of water;

(a) having a shape and dimensions thereof substantially stable with respect to time;

c). means for joining said downwardly inclined forming means to said horizontal forming means;

d). the water of said downwardly inclined body of water moving over said joining means and on to said horizontal forming means to form said horizontal body of water with said horizontal surface thereon.

14. The apparatus as defined in Claim 11 wherein said upwardly inclined body of water having sufficient depth to permit surfing maneuvers thereon, and wherein said upwardly inclined surface of water having sufficient width and length to permit surfing maneuvers thereon.

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15. The apparatus as defined in Claim 12 wherein said upwardly inclined body of water and said horizontal body of water having sufficient depth to permit surfing maneuvers thereon, and wherein said upwardly inclined surface of water and said horizontal surface of water having sufficient width and length to permit surfing maneuvers thereon.

16. The apparatus as defined in Claim 13 wherein said upwardly inclined body of water and said horizontal body of water having sufficient depth to permit surfing maneuvers thereon, and wherein said upwardly inclined surface of water and said horizontal surface of water having sufficient width and length to permit surfing maneuvers thereon.

17. The apparatus as defined in Claim 11 wherein said upwardly inclined body of water having sufficient depth to permit water skimming maneuvers thereon, and wherein said upwardly inclined surface of water having sufficient width and length to permit water skimming maneuvers thereon.

18. The apparatus as defined in Claim 12 wherein said upwardly inclined body of water and said horizontal body of water having sufficient depth to permit water skimming maneuvers thereon, and wherein said upwardly inclined surface of water and said horizontal surface of water having sufficient width and length to permit water skimming maneuvers thereon.

19. The apparatus as defined in Claim 13 wherein said upwardly inclined body of water and said horizontal body of water and said downwardly inclined body of water having sufficient depth to permit water skimming maneuvers thereon, and wherein said upwardly inclined surface of water and said horizontal surface of water and said downwardly inclined surface of water having sufficient width and length to permit water skimming maneuvers thereon.

20. ~~A stably-shaped~~ body of water with a surface thereon, comprising:

a). first means having a downstream end for forming a downwardly inclined body of water with a downwardly inclined surface thereon;

b). the water of said downwardly inclined body of water moving over said downwardly inclined forming means with a first velocity:

(1) said downwardly inclined body of water:

(a) having a shape and dimensions thereof substantially stable with respect to time;

c). second means having an upstream end for forming an upwardly inclined body of water with an upwardly inclined surface thereon;

d). the water of said upwardly inclined body of water moving over said upwardly inclined forming means with a first upwardly inclined velocity:

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(1) said upwardly inclined body of water:

(a) having a shape and dimensions thereof substantially stable with respect to time;

e). said upwardly inclined body of water having an upwardly inclined surface:

(1) having a downstream slope sufficient to permit an object floating by condition of motion thereon to slide down said slope with a second upwardly inclined velocity, relative to said first upwardly inclined velocity, at least as great as the negative of said first upwardly inclined velocity; and

f). means interconnecting said first and second means at said downstream and upstream ends respectively transitioning said body of water from its downward inclination to its upward inclination.

21. The apparatus as defined in Claim 20 wherein said upwardly inclined body of water having an upwardly inclined surface:

a). having an upstream slope insufficient to permit an object floating by condition of motion thereon to slide down said slope; and

b). having a downstream slope sufficient to permit an object floating by condition of motion thereon to slide down said slope with a second upwardly inclined velocity, relative to said first upwardly inclined velocity, at least as great as the negative of said first upwardly inclined velocity; and

c). having a furthermost downstream slope sufficient to permit an object floating by condition of motion thereon to slide down said slope with a second upwardly inclined velocity, relative to said first upwardly inclined velocity, greater than the negative of said first upwardly inclined velocity.

22. The apparatus as defined in Claim 20 wherein said interconnecting means includes a portion providing a horizontal body of water and said upwardly inclined body of water and said horizontal body of water have sufficient depth to permit surfing maneuvers thereon, and wherein said upwardly inclined surface of water and said horizontal surface of water have sufficient width and length to permit surfing maneuvers thereon.

23. The apparatus as defined in Claim 20 wherein said interconnecting means include a portion providing a horizontal body of water and said upwardly inclined body of water and said horizontal body of water and said downwardly inclined body of water have sufficient depth to permit water skimming maneuvers thereon, and wherein said upwardly inclined surface of water and said horizontal surface of water and said downwardly inclined surface of water have sufficient width and length to permit water skimming maneuvers thereon.

of an inclined surface allows spilling type wave formations as well as facilitating the removal of a transient surge. A novel fluid "half-pipe" waveform is also introduced.

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~~010691~~ 011391

24. An amusement apparatus for water sports activities using a body of shallow water flowing in a predetermined direction comprised of:

a). means for forming an upwardly inclined body of water, said water having an upwardly inclined surface thereon;

b). said forming means having an area of shaped face having width and length and a tunnel wave forming area;

(1) said tunnel waving forming area;

(a) having predominantly concave curvature in sections both parallel and normal to the horizontal;

(b) facing, as a whole, in a direction angularly displaced with respect to the direction of water flow of said upwardly inclined body of water and having;

i) an inclination with respect to the horizontal; and

ii) an attitude with respect to the direction of water flow;

(c) facing predominantly, at any given point, in a direction predominantly tangential to the direction of water of said upwardly inclined body of water whereby said body of water conforms to said concave curvature;

(d) having a down stream terminus such that the angle of release for the body of water defines an acute angle with respect to the horizontal;

(e) attitude being greater than ninety degrees and less than parallel with respect to said direction of water flow; and

c). a source of water for providing said body of shallow water; said body of water having:

(1) a depth sufficient only to allow skimming maneuvers;

(2) a velocity which is at least super critical; and

(3) a momentum transfer sufficient to support a user on said surface while performing water skimming maneuvers.

25. An amusement apparatus for water sports activities using a body of water flowing in a predetermined direction comprised of:

a). means for forming an upwardly inclined body of water, said water having an upwardly inclined surface thereon;

b). said forming means having an area of shaped face having width and length and a tunnel wave forming area;

(1) said tunnel waving forming area;

(a) having predominantly concave curvature in sections both parallel and normal to the horizontal;

(b) facing, as a whole, in a direction angularly displaced with respect to the direction of water flow of said upwardly inclined body of water and having;

i) an inclination with respect to the horizontal; and

ii) an attitude with respect to the direction of water flow;

(c) facing predominantly, at any given point, in a direction predominantly tangential to the direction of water of said upwardly inclined body of water whereby said body of water conforms to said concave curvature;

(d) having a down stream terminus such that the angle of release for the body of water defines an acute angle with respect to the horizontal;

(e) attitude being greater than ninety degrees and less than parallel with respect to said direction of water flow;

(2) said inclined surface forming area including:

(a) from an upstream boundary, concave curvature in horizontal towards an upward incline;

(b) between said upstream and a downstream boundary, an upward incline;

(c) towards said downstream trailing boundary, convex curvature in sections normal to the horizontal and from an upward incline towards the horizontal;

(d) said downstream boundary being at an angle from

the horizontal;

i) said downstream boundary having an elevated side and a non-elevated side;

(1) said elevated side continuous with said downstream boundary of said tunnel wave forming area;

(e) facing, as a whole, in a direction obtuse to the direction of water of said upwardly inclined body of water and having;

i) an inclination with respect to the horizontal; and

ii) an attitude with respect to the flow direction;

(f) facing predominantly, at any given point, in a direction tangential to the direction of water of said upwardly inclined body of water;

c). a source of water for providing said body of water, said water of said upwardly inclined body of water moving over said forming means with a range of velocity and volume to a pre-determined maximum;

(1) said upwardly inclined body of water:

(a) having shape and dimension thereof proportional to pre-determined velocity and volume ratios;

i) at a minimum, having a shape and dimensions thereof that are substantially stable with respect to time at said non-elevated side and having white water breaking region maintained upstream and of said elevated side;

ii) at a maximum, having a shape and dimensions thereof from said non-elevated side to said elevated side substantially stable with respect to time;

(2) said water of said inclined body of water:

(a) having a minimum, velocity and volume sufficient to form, over a period of time, an inclined body of water that at least flows over said non-elevated side;

(b) having a maximum, velocity and volume sufficient to form an inclined body of water that flows over said non-elevated side.

26. A method of increasing speed during use of an amusement water ride comprising:

providing a continuous flow of water having an equilibrium area sandwiched between a sub-equidyne area and a supra-equidyne area with flow being from said sub-equidyne area to said supra-equidyne area;

positioning said sub-equidyne area as the lowest area of said flow of water; and

proportioning said sub-equidyne area, said supra-equidyne area and said equilibrium area so that a rider on said water flow may oscillate between a position on said supra-equidyne area through said equilibrium area to said sub-equidyne area and by extending himself accelerates and may return toward said supra-equidyne area at an increased speed.

27. The apparatus as defined in claim 1 wherein said upwardly inclined body of water and said horizontal body of water have sufficient depth to permit surfing and water skimming maneuvers thereon.

28. The apparatus as defined in claim 1 wherein said upwardly inclined surface of water and said horizontal surface of water have sufficient width and length to permit surfing and water skimming maneuvers thereon.

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